EXAMINATION GUIDELINES FOR COMPUTER-RELATED INVENTIONS
Example: AUTOMATED MANUFACTURING PLANT

Disclosure for Claims 1, 3-6 and 8-13

The invention relates to a data compression and encryption system for monitoring and controlling an automated manufacturing process. The system translates the outputs of various sensors from an automated plant's manufacturing process into digital data signals. The system then processes the digital data signals into a compressed signal of various length codewords, encrypts the compressed signal, and transmits the compressed and encrypted signal to a remote supervisory location. At the remote supervisory location, the signal is decrypted and decompressed. The remote supervisory location then compares the decrypted and decompressed digital data signals to the preset ranges for the respective operating parameters of the automated plant's manufacturing process, generates a digital correction signal on the basis of the comparison, compresses and encrypts the correction signal, transmits the correction signal back to the plant location, and applies the correction signal to the disclosed process controllers, such as valves and motors, to maintain the automated plant's operation within its design parameters.

The automated plant's manufacturing process is controlled with a general purpose computer system. In the plant's general purpose computer system, various memory sections are included to store the plant's operating parameters and the sensor's outputs. The plant's various sensors and sensing systems are disclosed.

The remote supervisory location's process is implemented on a general purpose computer system. The remote supervisory location's general purpose computer system must have the identical compression and encryption capabilities of the automated plant's general purpose computer system.

The general purpose computer systems of the automated manufacturing plant and the remote supervisory location are programmed by a data signal transmitted from a remote main office location. The data signal includes a carrier wave and the source code segments for both the compression and encryption computer programs.

In the preferred embodiment for data compression, the general purpose computer system at each site is programmed with a computer program to compress/decompress a digital signal into variable length codewords in accordance with the Huffman code algorithm. The general purpose computer system has both an encoder and a decoder on which are stored identical Huffman code books. The use of compressed signals allows for reduced transmission time between the sites.

In the preferred embodiment for data encryption, the general purpose computer system at each site is programmed with a separate computer program to encrypt/decrypt a digital signal in accordance with the Data Encryption Standard (DES) algorithm. The DES algorithm uses an encryption key stored in a read-only memory to produce a digital signal whose content is protected and secured for transmission. In another embodiment for data encryption, the general purpose computer system has an application specific integrated circuit (ASIC). The various components of the ASIC are incorporated by reference from U.S. Patent No. *,***,***.

The disclosure contains both self-documenting source code for the preferred embodiments of the computer programs and high-level written descriptions of the computer programs with flow charts. There is correspondence between the written descriptions, the flow charts, and the specific software. The disclosure states that alternate computer programs based on the high-level written descriptions and flow charts are within the skill of a routineer in the art.

Table Notes for Claim 13

Note 1:   Disclosed invention monitors and controls an automated plant's manufacturing process.

Note 2:   Disclosed invention uses a general purposecomputer system.

Note 3:   Claimed invention recites specific software embodied on a computer-readable medium *i,e.*, specific software embodied in a carrier wave.

Note 4:   Most likely, the "data signal" does not occur as a natural phenomenon. The Examiner bears the burden of establishing that a claimed invention is a natural phenomenon. Therefore, absent object evidence to support the position that the "data signal" is a natural phenomenon, such a position would be untenable.

Note 5:   Claimed invention recites specific software. *See* Guidelines, Section IV.B.2(a)(ii).
THE REMAINDER OF THE EXAMINATION MUST BE COMPLETED.

For a more detailed analysis of the claim, see Examination Guidelines for Computer Related Inventions, Example: Automated Manufacturing Plant Claim Analysis appended to these examples.